

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A copy controlling system in a device for receiving and recording compressed and encoded digital contents, comprising:
a means for changing orthogonal transform coefficients for every block obtained by decoding processing of the digital contents, depending on attribute information relative to copying restriction of the digital contents; and
a means for creating stream data for recording after encoding again the orthogonal transform coefficients for every block, wherein
said means for changing orthogonal transform coefficients turns to all 0, the values of the orthogonal transform coefficients within one block other than a DC (direct current) component and a few AC (Alternating Current) components of a low frequency region, based on the attribute information;
~~wherein at least one of the orthogonal transform coefficients is changed to zero.~~

2. (Currently Amended) A copy controlling system in a device for recording digital contents compressed and delivered by the MPEG (Moving Picture Coding Experts Group) standard, comprising:
a means for requiring even a discrete cosine transform (referred to as "DCT") coefficient of the digital contents, in decoding the digital contents;
a within-block coefficient controlling means for changing the DCT coefficients within a block, according to attribute information relative to recording restriction of the digital contents; and
a means for creating stream data for recording after encoding again the obtained DCT coefficients, wherein
said within-block coefficient controlling means turns to all 0, the values of the DCT coefficients within one block other than a DC (direct current) component and a

few AC (Alternating Current) components of a low frequency region, based on the attribute information;

~~wherein at least one of the orthogonal transform coefficients is changed to zero.~~

3. (Currently Amended) A copy controlling system as set forth in claim 2, in which

the attribute information of the digital contents includes at least one of the following information: recording is prohibited (NeverCopy); since it was recorded once, no more recording is permitted (NoMoreCopy); only one recording is permitted (CopyOnce); and recording is free (CopyFree); and

~~said within-block coefficient controlling means turns to all 0, the values of the DCT coefficients within one block other than a DC (direct current) component and a few AC (Alternating Current) components of a low frequency region, based on the attribute information, as for the digital contents of the NeverCopy or the NoMoreCopy.~~

4. (Original) A copy controlling system as set forth in claim 2, in which in the case of the digital contents whose attribute information is the CopyOnce, information for changing the above to the attribute NoMoreCopy is added to the DCT coefficients.

5. (Original) A copy controlling system as set forth in claim 2, in which in said within-block coefficient controlling means, in the case of the digital contents whose attribute information is the NeverCopy or the NoMoreCopy, the number of the AC components whose values remain in the DCT coefficients within one block is increased or decreased periodically with time.

6. (Original) A copy controlling system as set forth in claim 2, in which in said within-block coefficient controlling means, in the case of the digital contents whose attribute information is the NeverCopy or the NoMoreCopy, the number

of the AC coefficients whose values remain in the DCT coefficients within one block is varied, based on the compression ratio of the digital contents; and in the case of the digital contents having a high compression ratio, the number of the AC coefficients whose values remain is set small, while in the case of the digital contents having a low compression ratio, the number of the AC coefficients whose values remain is set large.

7. (Original) A recording data controlling system for receiving a stream selected by a selector, of the MPEG (Moving Picture Coding Experts Group) stream delivered through a broadcast or a network and the reproduced MPEG stream from a reproducing device, comprising:

- a demultiplexer for separating the received MPEG stream into video data and data other than the video data;

- a variable-length code decoder for decoding the video data separated by said demultiplexer into even discrete cosine transform (referred to as "DCT") coefficients and classifying the above into run-length and level of the MPEG standard;

- a within-block coefficient controlling unit for turning to 0 the values of the DCT coefficients within a block other than a DC component and a predetermined number of AC components of low frequency region;

- a variable-length code coder for converting the coefficients from the within-block coefficient controller into variable-length codes;

- a barrel shifter for combining together code data of variable-length from said variable-length code coder and creating the MPEG video stream;

- a FIFO memory for temporarily storing data other than the video data separated by said demultiplexer; and

- a multiplexer for multiplexing the video data from said barrel shifter and the data other than the video data from said FIFO memory so to supply the MPEG stream for recording.

8. (Original) A recording data controlling system as set forth in claim 7, in which

the attribute information relative to recording restriction of the received MPEG stream is at least one of the following cases: recording is prohibited (NeverCopy); since it was recorded once, no more recording is permitted (NoMoreCopy); only one recording is permitted (CopyOnce); and recording is free (CopyFree),

the attribute information of the MPEG stream is supplied via another path different from that of the received MPEG stream, and

when the attribute information of the MPEG stream is the NeverCopy or the NoMoreCopy, the attribute information is supplied to said within-block coefficient controlling unit, where the values of all the coefficients within one block other than a DC component and a AC component adjacent to the DC component are turned to all 0.

9. (Original) A recoding data controlling system as set forth in claim 7, in which

said within-block coefficient controlling unit further including a latch circuit which is cleared every time a block start signal indicating the initial value within one block becomes active and preserves the output of an adder every time the AC component within one block is supplied;

an adder for adding the output of said latch circuit and run-length supplied from said variable-length code decoder,

the addition result of said adder indicating the number of the coefficient at a time of zigzag scanning the DCT coefficients within a block;

a comparator for comparing the output of said adder with the position of the AC coefficient whose value remains which is predetermined; and

a mask circuit for performing mask processing on the received DCT coefficients, based on the output from said comparator, and supplying the processed DCT coefficients.

10. (Currently Amended) A copy controlling method of digital contents, comprising the steps of:

a step of receiving compressed and encoded digital contents, requiring orthogonal transform coefficients for every block of the digital contents in decoding the digital contents, and changing the orthogonal transform coefficients, depending on attribute information relative to copying restriction of the digital contents; and

a step of creating stream data for recording after encoding again the obtained orthogonal transform coefficients, wherein

the values of the orthogonal transform coefficients within one block other than a DC (direct current) component and a few AC (Alternating Current) components of a low frequency region are turned to all 0 according to said attribute information;

~~wherein at least one of the orthogonal transform coefficients is changed to zero.~~

11. (Currently Amended) A copy controlling method of digital contents in a system for recording the digital contents compressed and delivered by the MPEG (Moving Picture Coding Experts Group) standard, comprising the steps of:

a step of requiring even a discrete cosine transform (referred to as "DCT") coefficient of the digital contents, in decoding the digital contents, and changing the DCT coefficients within a block, according to attribute information relative to recording restriction of the digital contents; and

a step of creating stream data for recording after encoding again the obtained DCT coefficients, wherein

the values of the DCT coefficients within one block other than a DC (direct current) component and a few AC (Alternating Current) components of a low frequency region are turned to all 0 according to said attribute information;

~~wherein at least one of the orthogonal transform coefficients is changed to zero.~~

12. (Currently Amended) A copy controlling method as set forth in claim 11, in which

the attribute information of the digital contents includes at least one of the following information: recording is prohibited (NeverCopy); since it was recorded once, no more recording is permitted (NoMorecopy); only one recording is permitted (CopyOnce); and recording is free (CopyFree); and

~~as for the digital contents whose attribute information is the NeverCopy or the NoMorecopy, the values of the DCT coefficients within one block other than a DC (direct current) component and a few AC (Alternating Current) components of a low frequency region are turned to all 0.~~

13. (Original) A copy controlling method as set forth in claim 11, in which in the case of the digital contents whose attribute information is the CopyOnce, information for changing the above to the attribute NoMoreCopy is added to the DCT coefficients.

14. (Original) A copy controlling method as set forth in claim 11, in which in the case of the digital contents whose attribute information is the NeverCopy or the NoMoreCopy, the number of the AC components whose values remain, in the DCT coefficients within one block, is increased or decreased periodically with time, not turned to 0.

15. (Original) A copy controlling method as set forth in claim 11, in which in the case of the digital contents whose attribute information is the NeverCopy or the NoMoreCopy, the number of the AC coefficients whose values remain, in the DCT coefficients within one block, is varied, based on the compression ratio of the digital contents; and in the case of the digital contents having a high compression ratio, the number of the AC coefficients whose values remain is set small, while in the case of the digital contents having a low compression ratio, the number of the AC coefficients whose values remain is set large.

16. (Currently Amended) A computer readable memory for storing a copy controlling program for executing a copy control of digital contents while controlling a computer,

the copy controlling program including:

a step of receiving compressed and encoded digital contents, requiring orthogonal transform coefficients for every block of the digital contents, in decoding the digital contents, and changing the orthogonal transform coefficients, depending on attribute information relative to copying restriction of the digital contents; and

a step of creating stream data for recording after encoding again the obtained orthogonal transform coefficients, wherein

the values of the orthogonal transform coefficients within one block other than a DC (direct current) component and a few AC (Alternating Current) components of a low frequency region are turned to all 0 according to said attribute information;

~~wherein at least one of the orthogonal transform coefficients is changed to zero.~~

17. (Currently Amended) A computer readable memory for storing a copy controlling program for executing a copy control of digital contents while controlling a computer in a system for recording the digital contents compressed and delivered by the MPEG (Moving Picture Coding Experts Group) standard,

the copy controlling program including:

a step of requiring even a discrete cosine transform (referred to as "DCT") coefficient of the digital contents in decoding the digital contents, and changing the DCT coefficients, according to attribute information relative to recording restriction of the digital contents; and

a step of creating stream data for recording after encoding again the obtained DCT coefficients, wherein

the values of the DCT coefficients within one block other than a DC (direct current) component and a few AC (Alternating Current) components of a low frequency region are turned to all 0 according to said attribute information;

~~wherein at least one of the orthogonal transform coefficients is changed to zero.~~

18. (Currently Amended) A computer readable memory for storing a copy controlling program as set forth in claim 17, in which
the attribute information of the digital contents includes at least one of the following information: recording is prohibited (NeverCopy); since it was recorded once, no more recording is permitted (NoMoreCopy); only one recording is permitted (CopyOnce); and recording is free (CopyFree), and

~~as for the digital contents whose attribute information is the NeverCopy or the NoMoreCopy, the values of the DCT coefficients within one block other than a DC (direct current) component and a few AC (Alternating Current) components of a low frequency region are turned to all 0.~~

19. (Original) A computer readable memory for storing a copy controlling program as set forth in claim 17, in which
in the case of the digital contents whose attribute information is the CopyOnce, information for changing the above to the attribute NoMoreCopy is added to the DCT coefficients.

20. (Original) A computer readable memory for storing a copy controlling program as set forth in claim 17, in which
in the case of the digital contents whose attribute information is the NeverCopy or the NoMoreCopy, the number of the AC components whose values remain, in the DCT coefficients within one block, is increased or decreased periodically with time, not turned to 0.

21. (Original) A computer readable memory for storing a copy controlling program as set forth in claim 17, in which

in the case of the digital contents whose attribute information is the NeverCopy or the NoMoreCopy, the number of the AC coefficients whose values remain, in the DCT coefficients within one block, is varied, based on the compression ratio of the digital contents; and in the case of the digital contents having a high compression ratio, the number of the AC coefficients whose values remain is set small, while in the case of the digital contents having a low compression ratio, the number of the AC coefficients whose values remain is set large.